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TORREYA

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THE FERNS OF THE ORGAN MOUNTAINS

BY E. O. WOOTON

Lying as they do some twelve miles east of the Mesilla Valley, it has been my privilege and great pleasure to visit the Organ Mountains of southern New Mexico at practically all seasons of the year and thus to become very thoroughly acquainted with their flora. A number of years of study and field contact with the flora of New Mexico in general has made me quite conversant with its plants.

Perhaps the most striking characteristic of the flora of these mountains as compared with that of the Territory is the relatively large number of ferns growing there. Of the total number of ferns reported for New Mexico (30 species and 2 varieties)*, I have collected 23 species and 2 varieties, and of this number 19 species and the 2 varieties are to be found in the Organ Mountains. In no other mountains of the Territory have I found more than 6 species, though I have visited a number of ranges on horseback or in a wagon. This difference in the abundance of ferns is all the more noticeable because the Organs are dry, rocky, and warm, while the Sacramento and Mogollon mountains are both more or less heavily timbered and watered, thus affording those cool, damp nooks that ferns particularly delight in.

The difference in number of species in favor of the Organs may be in part accounted for by the thoroughness with which I have

*The Pteridophyta of North America, north of Mexico. Linnaean Fern Bulletin, No. 9. 1895.

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examined the region. I hardly believe this is the correct explanation since the last ten years of collecting in these mountains have added but two species which were not collected on the first few trips. Moreover, it is not hard to find ferns in the Organs at any time of the year, while in the other mountains mentioned, aside from patches of the bracken, ferns are relatively rare. Extended collecting in the Organs has served to show how widely distributed some of the ferns have become: almost everywhere one goes in the range he may find one or more kinds of the ferns peculiar to the arid region.

As would naturally be expected from the climatic conditions afforded by the range, the ferns almost all belong to the group assigned by Dr. Underwood * to the Sonoran province. Of the thirty-six species referred to this province by him, fifteen are to be found in the Organs and several of them are quite abundant.

To a collector who thinks of a plant like the lady-fern or the maidenhair when a fern is mentioned, these mountains with their peculiar fern-flora would indeed be a revelation. The preservation of the small amount of moisture annually received is of the utmost importance in the economy of these plants, and the devices used to obtain this end are exceedingly interesting: the rolling up of the pinnules and exposing a hairy, scaly, or mealy surface to the action of the atmosphere. Drying up does not hurt them, and they are ready to grow at any time of the year when the water falls and the temperature is above the freezing point.

The following is a list of the species, with notes:

BOMMERIA HISPIDA (Mett.) Underw. Commonly forming mats over the warmer rocks with *Selaginella rupinicola* Underw. Sonoran.

NOTHOLAENA SINUATA (Sw.) Kaulf. One of the commonest species. On both calcareous and silicious rocks, in dry, warm situations. Fronds 12 to 16 inches long. Sonoran.

N. SINUATA INTEGERRIMA Hook. Collected thus far only on a limestone outlier of the range. Often associated with the species from which it is perfectly distinct in this region. I have never collected any intergrading forms, but Dr. Under-

* Our Native Ferns and their Allies, 65. 1893. [Ed. 4.]

wood was unwilling to raise it to a specific rank in 1897. Sonoran.

NOTHOLAENA FERRUGINEA Desv. A fairly abundant species.

Fronds change noticeably in appearance with age, becoming glabrous and brownish-green on the upper surface, while the granular coating of the under surface changes from a cream-color to a ferruginous shade. Sonoran.

NOTHOLAENA HOOKERI D. C. Eaton. The commonest fern of the range and at the same time one of the prettiest. It forms large tufts on the drier and warmer hillsides, protecting itself from desiccation by closing the five lobes of the frond upward, much as one might close the hand, thus exposing the yellow, mealy, lower surface. Sonoran.

NOTHOLAENA DEALBATA (Pursh) Kunze. One of the most interesting and rarest of the ferns of the region, with its little black-stiped fronds of numerous small bluish pinnules, which are covered with a white mealy powder on the under surface. Collected thus far only on the steep cliffs of the limestone outlier above mentioned. Sonoran.

CHEILANTHES FEEI Moore. Growing in small clusters in crevices of vertical or overhanging rocks, both calcareous and silicious. Not uncommon in the mountains of the Territory though never abundant in any locality. Sonoran.

CHEILANTHES TOMENTOSA Link. Forming bunches at the bases of and partially under loose rocks in dry silicious soil and but partly protected from the sun. Frequently associated with *Notholaena sinuata*. Sonoran.

C. TOMENTOSA EATONI Baker. Associated with the species from which it is hardly distinguishable. Sonoran.

CHEILANTHES FENDLERI Hook. One of the daintiest ferns of the region. Small and with finely dissected though stiffish fronds. Common in the mountains of the Territory, though never very abundant in any locality. Sonoran.

CHEILANTHES LINDHEIMERI Hook. A characteristic fern, forming long, matted strings of vegetation in crevices in the large granite boulders which fill one of the cañons. Not common. Sonoran.

- PELLAEA ATROPURPUREA (L.) Link. Under the edges of rounded granite boulders in dry warm situations. Médial.
- PELLAEA TERNIFOLIA (Cav.) Link. I have a single specimen of what seems to be *P. ternifolia* but I am inclined to think it is merely a starvling of the next species. Whether the true *P. ternifolia* occurs in our region is uncertain. Sonoran.
- PELLAEA WRIGHTIANA Hook. One of our commonest species ; grows in loose, dry soil under the edges of round granite boulders, growing best during the early spring months. Sonoran.
- PELLAEA INTERMEDIA Mett. Rare on the higher peaks on silicious rocks, but found also on the calcareous outlier referred to. Sonoran.
- ASPLENIUM RESILIENS Kunze. Found only in a few places in dryish soil under overhanging rocks where it is always cool and shaded. Austral.
- ASPLENIUM TRICHOMANES L. Under rocks in wet, cool, shady places near running water. Cosmopolitan.
- DRYOPTERIS FILIX-MAS (L.) Schott. This determination will probably have to be revised. The largest fern of the region ; found only in one cool, moist cañon, where it is not very abundant. It forms clusters eight or ten inches in diameter at the base, and the fronds are frequently two feet long. Boreal.
- PHANEROPHLEBIA AURICULATA Underw. Found only in cool, shady, moist situations in a single cañon. This locality is the most northern station for this fern yet reported and one of the four stations in the United States from which it is known. Sonoran.
- FILIX FRAGILIS (L.) Underw. Rare in the higher parts of the mountains, growing in open cañons in wet soil. Cosmopolitan.
- WOODSIA MEXICANA Fée. Rare on the higher slopes of the Organs ; much more common on other and higher mountains in the Territory. Sonoran.

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